Agricultural Drought

A drought is a prolonged period with little or no rain. This is, generally speaking, mostly an agricultural (and therefore economic) problem. Significant droughts occur about once every 15 years or so in Tennessee. The potential is there for such events to affect the entire state.

Earthquake

An earthquake is the sudden motion or trembling in the earth caused by an abrupt release of slowly accumulating strain. This sudden release results in ground shaking, surface faulting, and/or ground failures. Most earthquakes result in little or no damage, but they are potentially the most dangerous of all natural hazards affecting this state.

The area with the greatest potential for earthquakes in Tennessee is the western portion of the state adjacent to what is known as the New Madrid Seismic Zone (NMSZ). The NMSZ is the most seismically active area east of the Rocky Mountains.

A series of large quakes occurred during the winter of 1811-1812 that caused the formation of Reelfoot Lake in northwestern Tennessee. An equivalent seismic event today would wreak havoc on a wide section of the Mid-South, including the Memphis area.

Each year more than 400 seismic events occur -- largely unfelt by the populace. Over the past few years, several have been large enough to be felt in the western third of the state.

Fortunately, the vast majority of these events are detectable only with sensitive instrumentation. In terms of response, the state could experience a relatively significant earthquake every 25 years. There is concern, however, that a large magnitude event grows more probable with each passing day. Such an event could directly affect more than 50 percent of the state's population. A major earthquake, on the New Madrid Fault, could result in a catastrophic disaster which would have the potential to trigger a national response on a larger scale than any recorded earthquake event in modern United States history.

The state utilizes research and damage assessment information gathered by the Central United States Earthquake Consortium, the University of Memphis Center for Earthquake Research Information, the Mid-America Earthquake Center and the United States Geologic Survey to assist in development of preparedness, response and recovery plans to safeguard communities and citizens.

In 1993, the Eastern Tennessee Seismic Zone (ETSZ) was identified as running roughly parallel to Interstate 75 between Chattanooga and Knoxville. The zone in eastern Tennessee is 300km long by 50 km wide and has not produced a damaging earthquake in historical time; with the largest recorded magnitude being 4.6 in 1973. The Southern Appalachian Regional Seismic Network (SARSN) has monitored the ETSZ since 1981, and stations in the network have recorded numerous measurements. The area is considered at light risk of being affected by an earthquake in the next 100 years. Such an event could be expected to affect 25 percent of the population.

Flood

There are several different types of floods: flash, riverine, urban, and coastal. Obviously, coastal flooding would not be a problem in Tennessee. There are several incidents of each of the other types annually, however.

Regardless of the type of flood, the cause can almost always be attributed to excessive rainfall, either in the flood area or upstream. Since most precipitation in the state occurs between December and late March, this is the period during which the majority of the flooding can be expected to occur. There are several instances each year of locally heavy rainfall that results in flash flooding.

On an annual basis, flooding causes the most damage in Tennessee. From 1963 through 1998, flooding has resulted in 19 presidentially-declared disasters across the state, with expenditures in excess of $60 million. Flooding presents significant problems for between 20 and 30 percent of the state's population on an annual basis.

Tornado

A tornado is a violently whirling column of air extending downward to the ground with winds as high as 300 miles per hour. In a typical year in Tennessee, 11 tornadoes occur, killing five and injuring about a dozen of the state's citizens. Since tornado statistics began in 1916, more than 731 tornadoes have impacted the state; killing 631 and injuring over 3,100 people. Tornadoes occur more frequently in the western portion of the state than in the middle or eastern portions.

Many people were under the impression that a tornado would not strike an urban site. However, in the spring of 1998 -- 3:30 p.m., April 16, to be exact --an F4 tornado struck downtown Nashville, killing one and injuring 60 and causing over $100 million in damages. Then, on January 17, 1999, an F4 tornado struck Jackson in Madison County, killing six, injuring over 100 and causing over $10 million in damage. Only five days later, another tornado struck downtown Clarksville in Montgomery County, injuring five and causing over $72 million in damage.

A devastating tornado struck downtown Jackson, TN in Spring 2003 in almost the same area as the 1999 tornado. This tornado left seven dead and injured dozens. Hundreds of structures were seriously affected and several surrounding counties received enough damage to be included in the Presidential Disaster Declaration. Damages reached the $30 million level. Only a few weeks later a straight-line wind recording speeds up to 100 miles an hour, swept through Memphis/Shelby County leaving millions of dollars of property damage and prompting another Presidential Declaration. The damage was so wide-spread that the community began to identify the storm as “Hurricane Elvis” for its quick and dangerous path.

On April 2, 2006 a fast moving front swept through West Tennessee dropping a funnel cloud in Dyer County and another funnel cloud appeared in neighboring Gibson County just a few minutes later. The two F-3 tornado touchdowns left twelve citizens dead and forty injured. Entire small communities were left devastated. In several small towns, the town hall and police and fire stations were completely flattened. Just five days later on April 7, a series of twelve tornados swept through Middle Tennessee ranging from an F-1 to high F-3 in strength and struck at about 1 p.m. in the afternoon. Dickson, Cheatham, Davidson, Sumner and Warren Counties bore the brunt of the destruction which left twenty-three dead and eighty injured. Entire neighborhoods were destroyed along with several churches and schools. The Weather Service reports indicated that for a six month period in 2005-06 Tennessee was leading the nation in Tornado deaths and touchdowns.

The springtime months, from mid-March through the first of June, are the peak months for tornado activity; however, tornadoes can and have occurred in every month of the year. The afternoon and early evening hours from 3 to 9 p.m. are the best time for tornado development. On a per incident basis, tornadoes usually affect less than 1 to 5 percent of the state's population. Overall, the entire state is susceptible to the occurrence of tornadoes.

Wildfire

A wildfire is any incident of uncontrolled burning in grasslands, brush, or woodlands. Significant wild land fires occur about once every two years. However, several hundred lesser events occur annually across the entire state. The eastern and middle portions of the state are most affected, and a single event usually impacts less than 5 percent of any one county's population.

On November 4, 2000, the State Emergency Operations Center in Nashville was partially activated to accommodate the fighting of forest fires that affected all three regions of the state. Some 40,000 acres of forest were involved in the fires. Five counties in West Tennessee and approximately 15 counties in the upper Cumberland Plateau and the Knoxville/Sevier Basin were involved in fire suppression efforts.

Winter Storm

Winter storms include ice storms, blizzards and extreme cold. Winter storms in Tennessee often include extreme cold and ice. These storms are especially hazardous in terms of closing emergency routes, creating power and utility system failures, and immobilizing economic activity.

Because of the state's generally mild winters, major storms occur on average about once every five years. When they do occur, they typically affect as much as one-half of the state's population. The potential, however, exists that a major storm could affect the entire state.

In March of 1993 the "Storm of the Century" struck the eastern half of the state killing 18 people and causing $18 million in damage. In 1994, a major ice storm created massive utility outages and road damage over two-thirds of the state. The net result was over $100 million in damages -- by far the largest disaster in the state's history. Additionally, major snowstorms affected citizens of Tennessee in 1996 and 1998, requiring both State and Federal Government response. The total combined cost of these winter storms was in the $25 million range.